

### REMARKS

Claims 28, 30-43, 45-56, 59, 61-67 and 70-82 are pending. Each of the claims has been rejected.

No new matter has been added. Entry of this Amendment is respectfully requested.

#### **I. Claim Rejections Under 35 U.S.C. §102**

At paragraph 4 of the Office Action, the rejection of claims 45-52, 59, 62-67 and 70-82 under 35 U.S.C. §102(b) as being anticipated by Natan et al (USP 6,149,868) has been maintained.

In response to the amendment of the claims by Applicants to recite a system (claim 46) and a composition (claim 67) “consisting essentially of” particular elements, the Examiner has responded by stating that he is construing the claims as having the same scope as claims using the transitional phrase “comprising”. Further, the Examiner states that Applicants have not provided a clear indication of the basic and novel characteristics of the claimed invention, nor shown how the introduction of the additional components of Natan would materially change the characteristics of the claimed invention.

Applicants respectfully maintain their traversal of the rejection. In contrast to the Examiner’s statements to the contrary, Applicants have provided specific reasoning as to how the introduction of the additional components of Natan would materially change the basic and novel characteristics of the claimed invention.

In particular, and as previously noted, Natan discloses a system and a composition, both comprising a test sample and one or more metal particles arranged on a solid support which is a SERS-active substrate (a substrate that produces enhanced vibrational spectral intensities). The system of Natan is a sandwich structure where the metal particles and test sample are adsorbed or covalently attached to a SERS substrate (see, e.g., “summary of the invention” in col. 3). The only discussion regarding the composition of the SERS substrate in Natan is found in the first full paragraph, at col. 24. Therein, reference is made to SERS substrates made of Ag and Au.

The only other reference to the material comprising the SERS substrate is in the claims, such as claims 2 and 3.

Thus, in each of the embodiments of Natan the SERS substrate is included, which as discussed above, is a metal substrate required to produce enhanced vibrational spectral intensities.

With regard to independent claims 46 and 67, both claims were amended to replace the transitional phrase “comprising” with “consisting essentially of.” As such, these claims exclude those components that would have a material effect on the basic and novel characteristics of system and composition claimed.

The skilled artisan would understand that inclusion of a metal surface (the SERS substrate), in addition to the metal particles, would be expected to have unpredictable effects of the physics of the system and composition recited in the pending claims, especially in view of the fact that the metal particles of the pending claims have a direct effect on the intrinsic fluorescence of the biomolecules found in the test sample used in the system. Inclusion of a contiguous, planar metal surface, as taught in Natan, would be expected to interfere with the effect the metal particles have on the intrinsic fluorescence of the biomolecules in the test sample.

Therefore the skilled artisan would understand that inclusion of the metal SERS substrate of Natan in the system of claim 46 or the composition of claim 67 would be expected to have a material effect on the basic and novel characteristics of invention (increasing intrinsic fluorescence of a biomolecule by locating the biomolecule in close proximity to a metal particle) recited in these claims.

However, to further prosecution of the application, included herewith is an amendment to the claims such that the claims now use the transitional phrase “consisting.” As discussed above, each of the systems and compositions of Natan require the inclusion of a metal SERS substrate. Upon entry of this Amendment, none of the rejected claims of the present application will recite the inclusion of a metal SERS substrate. Accordingly, the systems and compositions of Natan do

not fall within the scope of the claims as amended, and Applicants respectfully request reconsideration and withdrawal of this rejection.

## **II. Claim Rejections Under 35 U.S.C. §103(a)**

At paragraph 5 of the Office Action, the rejection of claims 53-56 under 35 U.S.C. §103(a) as being unpatentable over Natan et al. as applied to claim 46 above, and further in view of Lakowicz et al (WO 99/36779, issued July 22, 1999) has been maintained.

The Examiner states while Natan does not specifically teach labeling a biomolecule with an extrinsic fluorescent marker, which can be a fluorophore, Lakowicz teaches that fluorophores can be conjugated to biological molecules, and that it would have been obvious to one of ordinary skill in the art to modify the biomolecules of Natan by labeling them with fluorophores, as suggested by Lakowicz, with a reasonable expectation of success.

Applicants first respectfully note that while the Examiner has characterized the rejection as being under 35 U.S.C. §102(b), the rejection was made under 35 U.S.C. §103(a) in the previous office action and Applicants understand it to have been maintained on the same basis.

As to the substance of the rejection, Applicants again respectfully traverse the rejection for the reasons set forth above with regard to Natan. Briefly, as discussed above, the claims have been amended to limit them to the components recited in the claims. Natan teaches the use of a metal SERS substrate, which is not included as a component of the system recited in claim 46. Accordingly, the system of Natan does not fall within the scope of the claim 46, or claims 53-56 dependent therefrom, and therefore does not anticipate the subject matter of claims 53-56. The disclosure of Lakowicz does not cure this deficit.

As neither Natan nor Lakowicz, alone or in combination, makes claims 53-56 obvious, Applicants respectfully request reconsideration and withdrawal of this rejection.

## **III. Claim Rejections Under 35 U.S.C. §112**

At paragraph 7 of the Office Action, claims 28, 30-43, 45-56, 59, 61-67 and 70-82 have been rejected under 35 U.S.C. §112 as being indefinite.

The Examiner states that the term “sugar moiety” in claims 28, 46 and 67 is undefined. In response Applicants include herewith an amendment to the rejected claims to simply recite “sugar”. The skilled artisan will readily understand the meaning of the term, and Applicants note that the Examiner himself has used the term in the discussion of this rejection in the outstanding office action.

In view of the Amendment to the claims, reconsideration and withdrawal of the rejection is respectfully requested.

#### **IV. Claim Rejections Under 35 U.S.C. §102**

At paragraph 9 of the Office Action, claim 28 is rejected under 35 U.S.C. §102(b) as being anticipated by Vo-Dinh et al. (1995).

The Examiner states that Vo-Dinh teaches a system consisting essentially of a test sample and one or more metal particles on a solid glass support. The Examiner states that Vo-Dinh teaches that the test sample comprises one or more biomolecules, specifically an amino acid which is para-amino benzoic acid.

Applicants respectfully traverse the rejection for the following reasons.

Vo-Dinh does not teach a test sample that comprises one or more biomolecules as recited in claim 28. Specifically, while the Examiner suggests that Vo-Dinh teaches a test sample comprising para-amino benzoic acid, Applicants respectfully note that para-amino benzoic acid is not an “amino acid.” Instead, as can be seen from the enclosed document showing the structure of para-amino benzoic acid, the compound is simply a benzene ring substituted with an amino group and a carboxylic acid. Further, none of the compounds listed in Table 1 of Vo-Dinh are biomolecules that fall within the scope of claim 28.

As the system of Vo-Dinh does not teach the use of a biomolecule in the test sample, Vo-Dinh does not teach each and every element of the system as recited in claim 28. Thus, Vo-Dinh does not anticipate claim 28 and Applicants respectfully request reconsideration and withdrawal of this rejection.

**V. Claim Rejections Under 35 U.S.C. §103(a)**

At paragraph 10 of the Office Action, claims 30-43 and 45 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vo-Dinh as applied to claim 28 above, and further in view of Natan et al (1998).

As discussed above, Vo-Dinh does not teach a system that includes a test sample comprising a biomolecule. Further, there is no teaching or suggestion that the system of Vo-Dinh could be used to detect a biomolecule in a test sample. While the system of Natan may be used to detect a biomolecule, the system of Natan requires the inclusion of a separate SERS substrate. Such a separate SERS substrate is not included within the scope of the claims as claim 28 has been amended to recite a system *consisting of* a test sample and one or more metal particles arranged on a solid glass or quartz support. There is no teaching or suggestion in Natan that a biomolecule could be detected in a system (such as that of Vo-Dinh) that lacks a SERS substrate. Accordingly, the claimed invention is more than the predictable use of known elements according to their established functions, and there would have been no apparent reason to combine the known elements in the manner being claimed. *KSR International Co. v. Teleflex, Inc.*, U.S. No. 04-1350 (April 30, 2007).

Accordingly, the combination of Vo-Dinh and Natan does not make claim 28 obvious, or make claims 30-43 and 45 obvious, which depend therefrom. Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

**VI. Conclusion**

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

In the event any variance exists between the amount of fees paid upon filing this document and the Patent Office charges for filing this document, including any fees required under 35 CFR 1.136 for any necessary extension of time to make the filing of this document

AMENDMENT UNDER 37 C.F.R. §1.111  
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timely, please charge or credit the difference to Deposit Account No. 13-2725. Further, if these papers are not considered timely filed, then a request is hereby made under 37 CFR 1.136 for the necessary extension of time.

Respectfully submitted,

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